Original Article

Acute pancreatitis in pregnancy: A treatment paradigm based on our hospital experience

Sunil Kumar Juneja, Shweta Gupta, Satpal Singh Virk[1], Pooja Tandon, Vidushi Bindal

Departments of Obstetrics and Gynaecology, [1]Gastro Surgery, Dayanand Medical College and Hospital, Ludhiana, Punjab, India

Abstract

Background: Acute pancreatitis (AP) is a rare event in pregnancy, occurring in approximately 3 in 10 000 pregnancies. The spectrum of AP in pregnancy ranges from mild pancreatitis to serious pancreatitis associated with necrosis, abscesses, pseudocysts, and multiple organ dysfunction syndromes. As in any other disease associated with pregnancy, AP is associated with greater concerns as it deals with two lives rather than just one as in the nonpregnant population. AP is most often associated with gall stone disease or hypertriglyceridemia. **Material and Methods:** We present 2 years of experience during which we had eight patients of AP. **Results:** Of the eight patients, three underwent laparoscopic cholecystectomy and five were treated conservatively. One had multiple cysts in the abdomen which were drained. All the patients delivered at term. Prophylactic tocolysis was given for 48-72 h to only those patients who had laparoscopic cholecystectomy. All the patients recovered completely. There was no maternal or fetal mortality. **Conclusion:** When properly managed AP in pregnancy does not carry a dismal prognosis as in the past.

Key words: Acute pancreatitis, pregnancy, prognosis, treatment

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Introduction

Acute pancreatitis (AP) is a rare event in pregnancy, occurring in approximately 3 in 10 000 pregnancies. The spectrum of AP in pregnancy ranges from mild pancreatitis to serious pancreatitis associated with necrosis, abscesses, pseudocysts, and multiple organ dysfunction syndromes. Pregnancy related hematological and biochemical alterations influence the interpretation of diagnostic tests and assessment of severity of AP. As in any other disease associated with pregnancy, AP is associated with greater concerns as it deals with two lives rather than just one as in the nonpregnant population. The recent advances in clinical gastroenterology have improved the early diagnosis and effective management of biliary pancreatitis. Diagnostic studies such as endoscopic ultrasound, magnetic resonance cholangiopancreatography and endoscopic retrograde cholangiopancreatography and therapeutic modalities that include endoscopic sphincterotomy, biliary stenting, common bile duct (CBD) stone extraction, and laparoscopic cholecystectomy are major milestones in gastroenterology. When properly managed AP in pregnancy does not carry a dismal prognosis as in the past.[1]

Older reviews of AP in pregnancy reported maternal and fetal mortality rates as high as 20 and 50%, respectively.[2-6] The above data from the pre-endoscopic retrograde cholangiopancreatography (ERCP), prelaparoscopic cholecystectomy era are not valid anymore. Contemporary reports document a much improved outcome of AP in pregnancy, when the management of AP secondary to gallstones has undergone substantial changes.[7,8] We present our experience of 2 years of acute pancreatitis in pregnancy.

Materials and Methods

This is a retrospective study of 2 years conducted at a Medical College attached to a tertiary care hospital of North India. The study was conducted from January 2011

Address for correspondence: Dr. Sunil Kumar Juneja, 24 F, Kitchlu Nagar, Ludhiana, Punjab, India.
E-mail: drsuniljuneja@yahoo.co.in

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to December 2012. Pregnant women with clinical signs and symptoms suggestive of acute pancreatitis were included for the study. Diagnosis was confirmed by rise in pancreatic enzymes. Radiological imaging was done to see the pancreatic size and appearance, pancreatic duct, peripancreatic collection, CBD, and gall bladder for any other causes of acute abdomen. Evaluation for fetal well being was also done. Conservative medical management of acute pancreatitis was the main stay of treatment. Surgical management was carried out for the underlying cause. The women were followed up till delivery. Maternal and fetal conditions at discharge were noted.

Results

Eight pregnant women with clinical and biochemical diagnosis of acute pancreatitis were included in the study. Of the eight women six (75%) belonged to the group of 20-25 years, one (12.5%) to 26-30 years, and one (12.5%) was more than 35 years. There was no woman in the age group of 31-35 years, three (37.5%) women presented in the second trimester and five (62.5%) in the third trimester [Table 1]. Besides having classical symptoms of acute pancreatitis (acute epigastric pain radiating to the back associated with nausea and vomiting), four patients had concurrent jaundice and three had pulmonary findings (pleural effusion, basal lung collapse).

Serum amylase and lipase were significantly raised in all the patients [Tables 2 and 3]. Hypertriglyceridemia was seen in one patient and cholelithiasis in five patients [Table 4]. Conservative medical management of acute pancreatitis was the main stay of treatment. Surgical management (laparoscopic cholecystectomy) was carried out for the underlying cause (cholelithiasis) in three patients. One patient underwent ERCP for CBD stones. All women delivered healthy babies vaginally at term. One patient developed multiple intraabdominal fluid collections post-partum which were drained by pigtail catheter and was discharged in a satisfactory condition.

Table 1: Distribution of patients according to age and period of gestation

Characteristic	N (%)
Age (yrs)	
20-25	6 (75)
26-30	1 (12.5)
31-35	0 (0)
>35	1 (12.5)
Period of gestation (weeks)	
First (Till 12)	0 (0)
Second (13-28)	3 (37.5)
Third (29-40)	5 (62.5)

Table 2: Distribution of patients according to the serum amylase levels

Levels IU/L	Number	%
200-500	05	62.5
501-800	03	37.5
>801	00	00

Table 3: Distribution of patients according to the serum Lipase levels

Levels IU/L	Number	%
200-500	03	37.5
501-800	03	37.5
>801	02	25

Table 4: Distribution of patients according to the cause

Cause	Number	%
Cholelithiasis	05	62.5
Gall bladder sluge	01	12.5
Hypertriglyceridemia	01	12.5
Idiopathic	01	12.5

Discussion

Acute pancreatitis in pregnancy remains a challenging clinical problem to manage, with a relatively limited but expanding evidence base. The most common predisposing cause of pancreatic symptoms during pregnancy is cholelithiasis (i.e., gallstones that block the pancreatic duct). Six of our patients had gall bladder pathology (75%) and two of these had dilated CBD (33.3%) and one had dilated pancreatic duct (16.6%). One (12.5%) patient had gall bladder sludge. A second common scenario noted in pregnancy is hypertriglyceride-induced pancreatitis. One (12.5%) patient in our study had hypertriglyceridemia (670 mg/dl). This hypertriglyceridemia can be attributed to increased estrogen due to pregnancy and the familial tendency for some women toward high triglyceride levels. Lipids and lipoprotein (including triglycerides) levels are increased during pregnancy, which increase three-fold peak in the third trimester. Field and barkin reported up to 50% increase in cholesterol as a result of higher blood levels of estrogen.[9] The level of triglycerides required to induce acute pancreatitis is between 750 and 1000 mg/dL.[10] The total serum triglyceride level during pregnancy is usually less than 300 mg/dL. After delivery, triglyceride levels usually fall. Fifty percent of women with pancreatitis develop hypocalcemia secondary to diminished calcium in pregnancy, which worsens with pancreatitis. We observed hypocalcaemia in five (62.5%) of our patients, who were treated with calcium gluconate by slow intravenous injection with guided by serum calcium.

Drugs, specifically tetracycline and thiazides (not commonly used in pregnancy), as well as increased alcohol consumption, can also cause pancreatitis. None of our patients had history of alcohol intake. Recently, pancreatitis has been linked to

more than 800 mutations of the cystic fibrosis transmembrane conductance regular gene.[11]

Signs and symptoms of acute pancreatitis usually include midepigastric pain, left upper quadrant pain radiating to the left flank, anorexia, nausea, vomiting, decreased bowel sounds, low-grade fever, and associated pulmonary findings 10% of the time (unknown cause). All our patients presented with midepigastric pain, left upper quadrant pain radiating to the left flank, anorexia, nausea, vomiting, and three (37.5%) had associated pulmonary findings. All our patients had pulse oxymeter reading as pulmonary signs (often include hypoxemia), may be the only predictable sign before the patient develops full-blown adult respiratory distress syndrome. Abdominal tenderness and muscle rigidity were seen in four (50%) patients. Jaundice was seen in three (37.5%) patients.

The most common misdiagnosis of pancreatitis in the first trimester is hyperemesis. In women presenting with severe nausea and vomiting in the first trimester, consider obtaining amylase, lipase levels, and liver function tests, which when elevated are diagnostic for pancreatitis. In one study of 25 cases of pancreatitis, 11 cases were diagnosed in the first trimester.[12] None of our patients presented in the first trimester. Three (37.5%) presented in the second trimester and five (62.5%) presented in the third trimester.

Pancreatitis in pregnancy had been associated with the past with a high maternal mortality and fetal mortality. However, more recent studies[13,14] have found that these rates are declining due to earlier diagnosis and greater treatment options, which have improved management of pancreatic symptoms that can cause preterm labor. There was no maternal or fetal mortality in our study. The relapse rate for gallstone-related pancreatitis is higher (upto 70%) than for other causes with conservative treatment only. Imaging of the pancreas can be performed by using ultrasound and computed tomography. Ultrasound is the imaging technique of choice for pregnant women because it can distinguish a normal appearing pancreas from one that is enlarged, and it can also identify gallstones. In addition ultrasound is safer than CT scan during pregnancy.

EUS and MRCP are the available imaging studies in diagnosing a biliary etiology for AP. Potential radiation to the fetus is a major disadvantage with CT scan, restricting their use substantially. Diagnostic endoscopic retrograde cholangiopancreatography (ERCP) is to be avoided whenever possible owing to the associated risks including bleeding, perforation, pancreatitis, fetal radiation, while abdominal ultrasound, MRCP and EUS do not carry these risks. ERCP was done in one (12.5%) of our patients with fetal shielding (a lead apron is placed over the maternal abdomen) and limited fluoroscopy (to less than 1 min) which detected choledocholithiasis. A number of studies and case reports document the use of ERCP in pregnancy.[13-15] Second trimester is thought to be the ideal time for ERCP to avoid any possible teratogenic effects of radiation. Prophylactic antibiotics and tocolytics were administered to all our patients who underwent cholicystectomy and ERCP.

Diagnostic blood tests for AP include serum amylase and lipase, as well as triglyceride levels, calcium levels, and a complete blood count. Amylase levels in pregnancy range from 10 to 160 IU/L in some labs. These values vary depending on each laboratory. Lipase, another enzyme produced by the pancreas, has norms ranging from 4 to 208 IU/L (these also vary depending on laboratory). Amylase levels can also rise with cholecystitis, bowel obstruction, and ruptured ectopic, as well as other conditions. The mean amylase levels in our patients were 370 IU/L (maximum 562 IU/L) and of lipase was 936.62 IU/L (maximum: 2620 IU/L). Amylase levels do not correlate with disease severity. Elevated serum lipase levels remain elevated longer than amylase following an episode of pancreatitis. Conservative medical management of pancreatitis includes intravenous fluids, nasogastric suctioning, bowel rest, use of analgesics and antispasmodics, fat restriction with total parenteral nutrition, and antibiotics. Management of underlying cause-management of gallstones.[7] Laparoscopic cholecystectomy is ideally performed in the second trimester when the risk to fetus is the least and only limited technical problems exist as a result of an enlarging uterus. Three (37.5%) of our patients underwent laparoscopic cholecystectomy in second trimester.

No formal recommendations exist for gestational hypertriglyceridemia treatment in pregnancy at present. Treatment of hyperlipidemic AP is mostly supportive. Lipoprotein apheresis and plasmapheresis are therapies known to lower serum triglyceride levels.

Conclusion

While a rare event, acute pancreatitis does occur in pregnancy. AP in pregnancy remains a challenging clinical problem to manage. Among the various etiological factors for AP in pregnancy, gallstone disease is the most common one. Abdominal ultrasound, CT scan, EUS, and MRCP are the available imaging studies in diagnosing a biliary etiology for AP. Diagnostic ERCP is to be avoided whenever possible owing to the associated risks including bleeding, perforation, pancreatitis, fetal radiation, while abdominal ultrasound, MRCP and EUS do not carry these risks. The general management of AP in pregnancy is supportive. Laparoscopic cholecystectomy is ideally performed in the second trimester when the risk to fetus is the least and only

limited technical problems exist as a result of an enlarging uterus. The outcome of pregnant patients with AP has substantially improved with technical advances in imaging and therapeutic endoscopy. Fortunately, if treated early, pre-term labor can be avoided and the incidence of recurrent attacks minimized.

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